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10/587,188	07/25/2006	Mark Francis Rumreich	PU040031	3367

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EXAMINER	
FAULK, DEVONA E	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,188	RUMREICH, MARK FRANCIS	
	Examiner	Art Unit	
	DEVONA E. FAULK	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 May 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *7/25/2006* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 5/5/09 have been fully considered but they are not persuasive. The applicant asserts essentially that the prior art fails to teach of dividing of an input signal, one component being applied to a speaker in a polarity which is inverse to connection of a second component of the input audio signal. The examiner disagrees. As noted in the previous office action, Modafferi discloses a first-order crossover network for dividing input audio signals into high and low frequency bands at a crossover frequency in a loudspeaker system having first and second loudspeakers having respective impedance, each loudspeaker having positive and negative terminals (Figure 1,column 2, lines 13-60), the first-order crossover network comprising:

a first component coupled to the first loudspeaker to form a low-pass filter for providing the first loudspeaker low frequency band signals (inductor L, Figure 1); and

a second component coupled to the second loudspeaker to form a high-pass filter for providing the second loudspeaker high frequency band signals (capacitor C, Figure 1), wherein the low-pass and the high-pass filters are first-order filters,

and wherein the first component is coupled to the loudspeaker in series, the second component Is coupled in series to the second loudspeaker (Figure 1),

and impedances of the first and second components are selected such that a phase difference at the crossover frequency between respective responses of the first and second loudspeakers is no greater than 60 degrees (column 2, lines 60-62).

Modafferi teaches of a first and second component. Modafferi fails to disclose that the first component is coupled in a first polarity and the second component coupled in a second polarity , the second polarity being an inverse of the first polarity.

Tanida discloses a first component is coupled in a first polarity and a second component coupled in a second polarity , the second polarity being an inverse of the first polarity (Figure 1; column 2, lines 29-43). It would have been obvious to modify Modafferi so that the first component is coupled in a first polarity and a second component is coupled in a second polarity , the second polarity being an inverse of the first polarity for the benefit of providing a better sounding system.

Modafferi teaches of dividing an input signal and Tanida teaches of a first component coupled in a first polarity and a second component coupled in a second polarity. The examiner is maintaining the rejection.

2. Claims 4 and 15 are cancelled.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3,5-14,16-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Modafferi (US 4,771466) in view of Tanida et al. (US 5,243,656).

Regarding claim 1, Modafferi discloses a first-order crossover network for dividing input audio signals into high and low frequency bands at a crossover frequency in a loudspeaker system having first and second loudspeakers having respective impedance, each loudspeaker having positive and negative terminals (Figure 1,column 2, lines 13-60), the first-order crossover network comprising:

a first component of the input audio signal coupled to the first loudspeaker to form a low-pass filter for providing the first loudspeaker low frequency band signals (inductor L, Figure 1); and

a second component of the input audio signal coupled to the second loudspeaker to form a high-pass filter for providing the second loudspeaker high frequency band signals (capacitor C, Figure 1), wherein the low-pass and the high-pass filters are first-order filters,

and wherein the first component is coupled to the loudspeaker in series, the second component Is coupled in series to the second loudspeaker (Figure 1),

and impedances of the first and second components are selected such that a phase difference at the crossover frequency between respective responses of the first and second loudspeakers is no greater than 60 degrees (column 2, lines 60-62).

Modafferi teaches of a first and second component. Modafferi fails to disclose that the first component is coupled in a first polarity and the second component coupled in a second polarity , the second polarity being an inverse of the first polarity.

Tanida discloses a first component is coupled in a first polarity and a second component coupled in a second polarity , the second polarity being an inverse of the first polarity (Figure 1; column 2, lines 29-43).

It would have been obvious to modify Modafferi so that the first component is coupled in a first polarity and a second component is coupled in a second polarity , the second polarity being an inverse of the first polarity for the benefit of providing a better sounding system.

Regarding claim 2, Modafferi as modified discloses wherein the responses are acoustic responses (Modafferi, Figure 1).

Regarding claim 3, Modafferi as modified discloses wherein the responses are electrical responses (Modaferri Figure 1).

Regarding claim 5, Modafferi as modified discloses wherein the first component is an inductor, the second component is a capacitor, and impedance of the inductor and the capacitor is selected such that the phase shift for each filter is no less than 60 degrees (Modafferi, Figures 1 and 2; column 2, lines 50-63).

Regarding claim 6, Modafferi as modified discloses wherein the input audio signals are equalized to flatten combined response of the first and second loudspeakers (Modafferi, Figures 1 and 2; column 2, lines 50-63.

Regarding claim 7, Modafferi as modified discloses wherein the combined response at the crossover frequency is raised (Modafferi, Figure 2).

Regarding claim 8, Modafferi as modified discloses wherein the combined response at the crossover frequency is raised by about 4.5 decibels (Modafferi, Figure 2, column 2, lines 13-17).

Regarding claim 9, Modafferi as modified discloses, wherein combined response of the first and second loudspeakers is no greater than -6 decibels (Modafferi, Figure 2; column 2, lines 13-17).

Regarding claim 10, Modafferi as modified discloses wherein the combined response is no less than -10 decibels (Modafferi, Figure 2; column 2, lines 13-17).

Regarding claim 12, Modafferi discloses a loudspeaker system comprising: first and second loudspeakers having respective impedance, each loudspeaker having positive and negative terminals (Figure 1column 2, lines 13-60); and a crossover network, being a first-order network, for dividing input audio signals into high and low frequency bands at a crossover frequency, the crossover network including first and second components respectively coupled to the first and second loudspeakers to form respective low-pass and high-pass filters for providing the low and high frequency band signals to the respective first and second loudspeakers (inductor L and capacitor C of Figure 1 read on first and second components) , wherein the low-pass and high-pass filters are first-order filters,

and wherein the first component is coupled to the loudspeaker in series, the second component Is coupled in series to the second loudspeaker (Figure 1), and the impedance of the first and second components is selected, such that a phase difference between respective responses of the first and second loudspeakers is no greater than 60 degrees at the crossover frequency (column 2, lines 60-62).

Modafferi teaches of a first and second component. Modafferi fails to disclose that the first component is coupled in a first polarity and the second component coupled in a second polarity , the second polarity being an inverse of the first polarity.

Tanida discloses a first component is coupled in a first polarity and a second component coupled in a second polarity , the second polarity being an inverse of the first polarity (Figure 1; column 2, lines 29-43).

It would have been obvious to modify Modafferi so that the first component is coupled in a first polarity and a second component is coupled in a second polarity , the second polarity being an inverse of the first polarity for the benefit of providing a better sounding system.

Regarding claim 13, Modafferi as modified discloses wherein the responses are acoustic responses (Modafferi, Figure 1).

Regarding claim 14, Modafferi as modified discloses wherein the responses are electrical responses (Modafferi, Figure 1).

Regarding claim 15, Modafferi as modified discloses wherein the first component is coupled in series to the first loudspeaker in a first polarity, the second component is coupled in series to the second loudspeaker in a second polarity, and the second polarity is an inverse of the first priority (Modafferi, Figures 1 and 2; column 2, lines 50-63).

Regarding claim 16, Modafferi as modified discloses wherein the first component is an inductor, the second component is a capacitor, and impedance of the inductor and the capacitor is selected such that the phase shift for each filter is no less than 60 degrees (Modafferi, Figures 1 and 2; column 2, lines 50-63).

Regarding claim 17, Modafferi as modified discloses wherein the input audio signals are equalized to flatten combined response of the first and second loudspeakers (Modafferi, Figures 1 and 2; column 2, lines 50-63).

Regarding claim 18, Modafferi as modified discloses wherein the combined response at the crossover frequency is raised (Modafferi, Figure 2).

Regarding claim 19, Modafferi as modified discloses wherein the combined response at the crossover frequency is raised by about 4.5 decibels (Modafferi, Figure 2, column 2, lines 13-17).

Regarding claim 20, Modafferi as modified discloses, wherein combined response of the first and second loudspeakers is no greater than -6 decibels (Modafferi,Figure 2; column 2, lines 13-17).

Regarding claim 21, Modafferi as modified discloses wherein the combined response is no less than -10 decibels (Modafferi, Figure 2; column 2, lines 13-17).

Regarding claim 22, Modafferi discloses a method for generating output signals from a loudspeaker system having first and second loudspeakers (Figure 1; column 2, lines 13-63), the method comprising the steps of:

passing audio signals to a first-order crossover network including low-pass and high-pass filters (Figure 1); coupling the low-pass filter to the first loudspeaker, and coupling the high-pass filter to the second loudspeaker (Figures 1 and 2; column 2, lines 50-63) ;

selecting impedances of the first and second filters, such that each filter has a frequency response of no greater than -6 decibels at a crossover frequency, and a phase difference at a crossover frequency of output signals of the low-pass and high-pass filters is no greater than 60 degrees (Figures 1 and 2; column 2, lines 50-63).

Modafferi teaches of coupling the low-pass filter to a first loudspeaker and coupling a high-pass filter to a second loudspeaker. Modafferi fails to disclose that the first component is coupled in a first polarity and the second component coupled in a second polarity , the second polarity being an inverse of the first polarity.

Tanida discloses a first component is coupled in a first polarity and a second component coupled in a second polarity , the second polarity being an inverse of the first polarity (Figure 1; column 2, lines 29-43).

It would have been obvious to modify Modafferi so that the first component is coupled in a first polarity and a second component is coupled in a second polarity , the second polarity being an inverse of the first polarity for the benefit of providing a better sounding system.

Regarding claim 23, Modafferi as modified discloses further comprising the step of equalizing input signals to equalize responses of the loudspeaker system (Modafferi, Figures 1 and 2; column 2, lines 50-63).

Regarding claims 11 and 24, Modafferi as modified discloses how the construction of the loudspeaker system can be modified based upon what is the desired response sought by the designer (column 2, line 13- column 4, line 62) . Therefore, the examiner asserts that it would be a matter of design choice to have the phase difference be about 40 degrees. It would have been obvious to modify Modafferi so that the phase difference is about 40 degrees in order to meet a specific design specification.

Regarding claims 25 and 26, Modafferi as modified discloses a first and second loudspeaker (Figure 1) and how the construction of the loudspeaker system can be modified based upon what is the desired response sought by the designer (column 2, line 13- column 4, line 62). (Figures 1 and 2; column 2, lines 50-63). Modafferi as modified fails to explicitly teach of the impedances of the loudspeakers. Loudspeakers implicitly have impedance. The examiner asserts that it is a matter of design choice to have the impedances be different or the same. It would have been obvious to modify Modafferi so that the impedances of the loudspeakers are the same or different depending upon what meets a specific design specification.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devona E. Faulk/
Primary Examiner, Art Unit 2614